



3D Elevation Program (3DEP) Updates and Future Plans

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September 11, 2026

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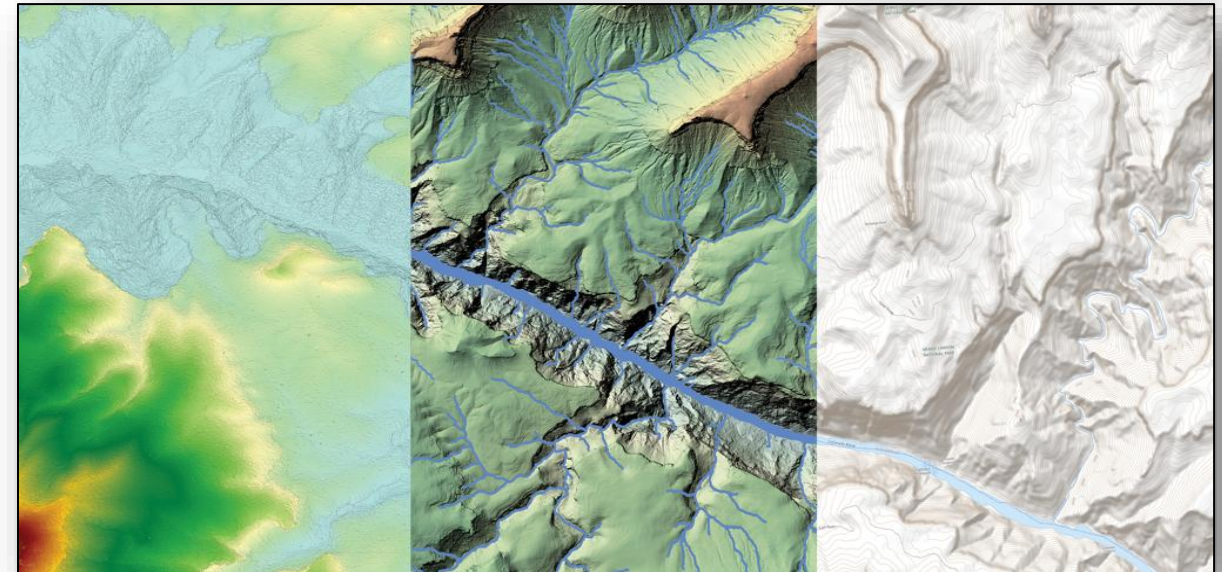
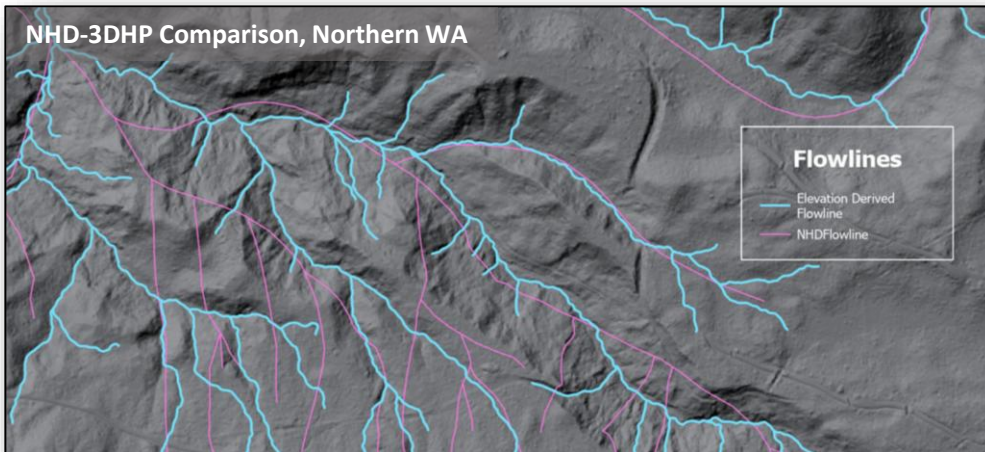
GeoGov 2026 Summit Special Achievement Award



Elevation and Hydrography are Interconnected

- Elevation and hydrography are linked through physical processes – terrain determines water's path and water carves the terrain through erosion
- Mapping them separately leads to misalignment that impedes hydrologic modeling
- We can now map them together efficiently with the private sector using 3DEP data to enable accurate flood modeling, modeling for hydrologic projects, and other applications
- In the future, the use of artificial intelligence could vastly improve this mapping process

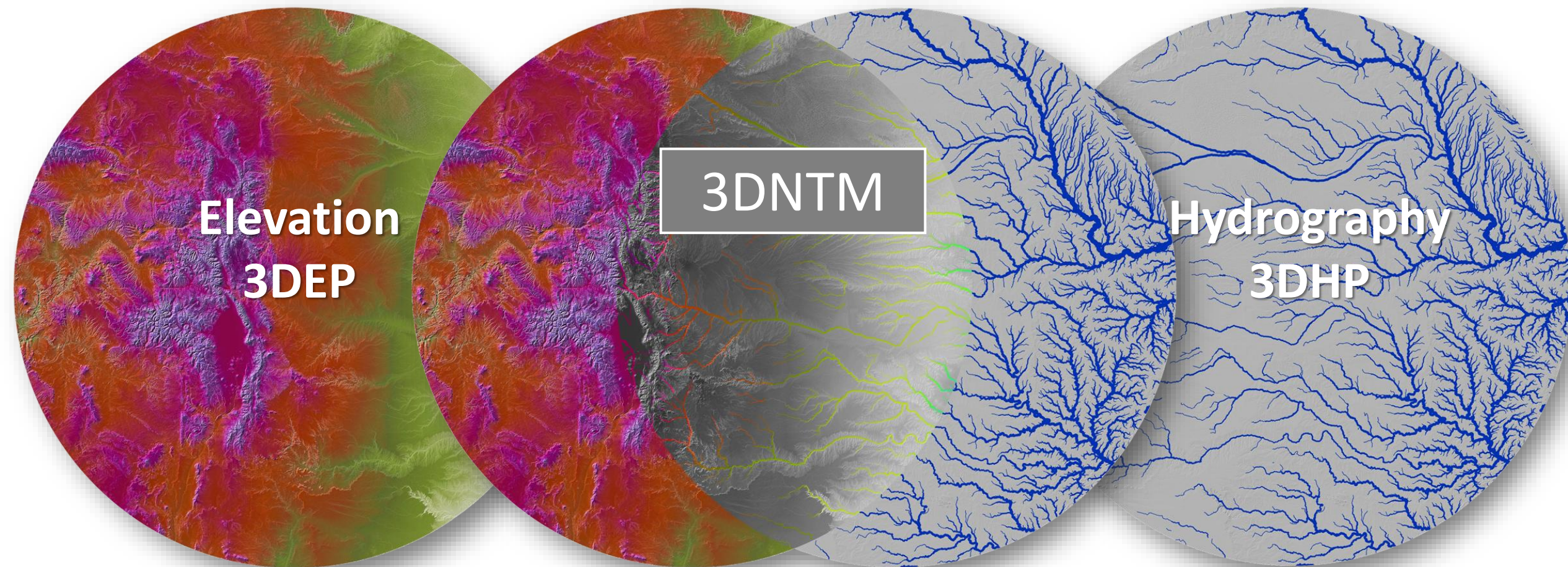
The confluence of the Colorado and Little Colorado rivers, showing their paths through the rock



Elevation, hydrography, and topographic maps depicting the Grand Canyon

The 3D National Topography Model (3DNTM)

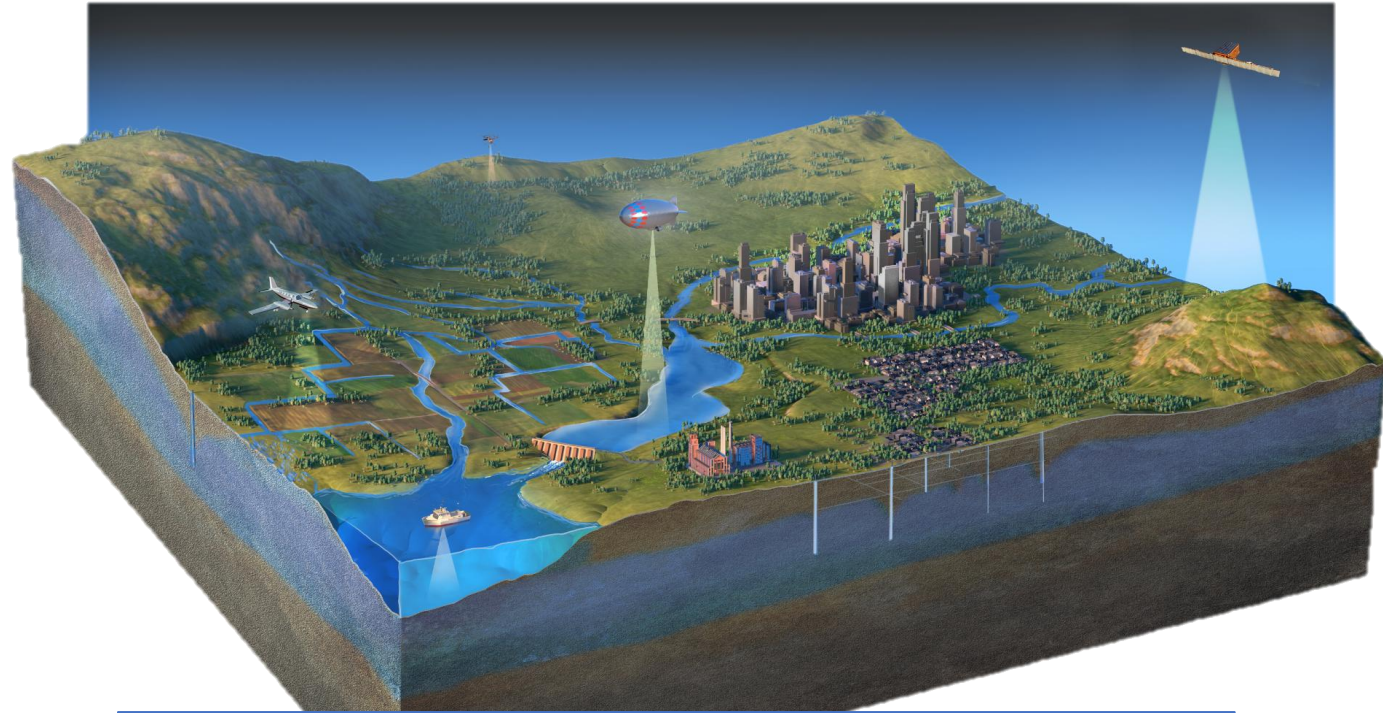
Bringing 3DEP and 3DHP into alignment to improve interoperability and achieve efficiencies



3D National Topography Model (3DNTM)

3DNTM integrates USGS elevation and hydrography datasets to model the Nation's topography in 3D

- A living model of the Nation's topography in 3D that incorporates the latest geospatial data
- 3D Nation vision of a continuous data surface from the depths of the oceans to the peaks of the mountains
- Spatial and temporal alignment of USGS elevation and hydrography
- Comprised of three ongoing components:
 - Ongoing collection and delivery of national 3D Elevation Program (3DEP) data
 - Implementation of the next generation 3D Hydrography Program (3DHP) derived from 3DEP data
 - A longer-term goal to AI-enable hydrography, elevation, and other data from The National Map



Supporting the Nation's Critical Applications:

Provides foundational data to: Earth MRI, National Landslides Preparedness Act, FEMA next generation of flood hazard and risk information, The NOAA National Water Model, and The EPA Clean Water Act

NATIONAL GEOSPATIAL PROGRAM

3D National Topography Model · **Core Principles**

ELEVATION & HYDROGRAPHY



Collect

Lead acquisition, management, and distribution of highly accurate and precise elevation data for the Nation, including under surface waters. Use these data as the base for deriving high-definition surface water mapping across landscapes nationwide



Build

Provide value-added analysis-ready models depicting the 3D structure of the United States through integrated elevation and hydrography datasets like point clouds, high resolution seamless grids, networked surface water and watershed networks, and other derivatives



Deliver

Provide easy to navigate cloud-native , cloud-optimized access to data through dynamic services, catalogs, open geospatial formats, and artificial intelligence (AI)-readable metadata



Analyze

Provide AI embeddings, agents, and interfaces to drive new levels of analytical power and automated information extraction. Use data to analyze and compute high-value data layers

Building National 3DEP Coverage One Year at a Time



\$13B

Potential annual benefit with ROI of 5:1



> 300

Partner Organizations



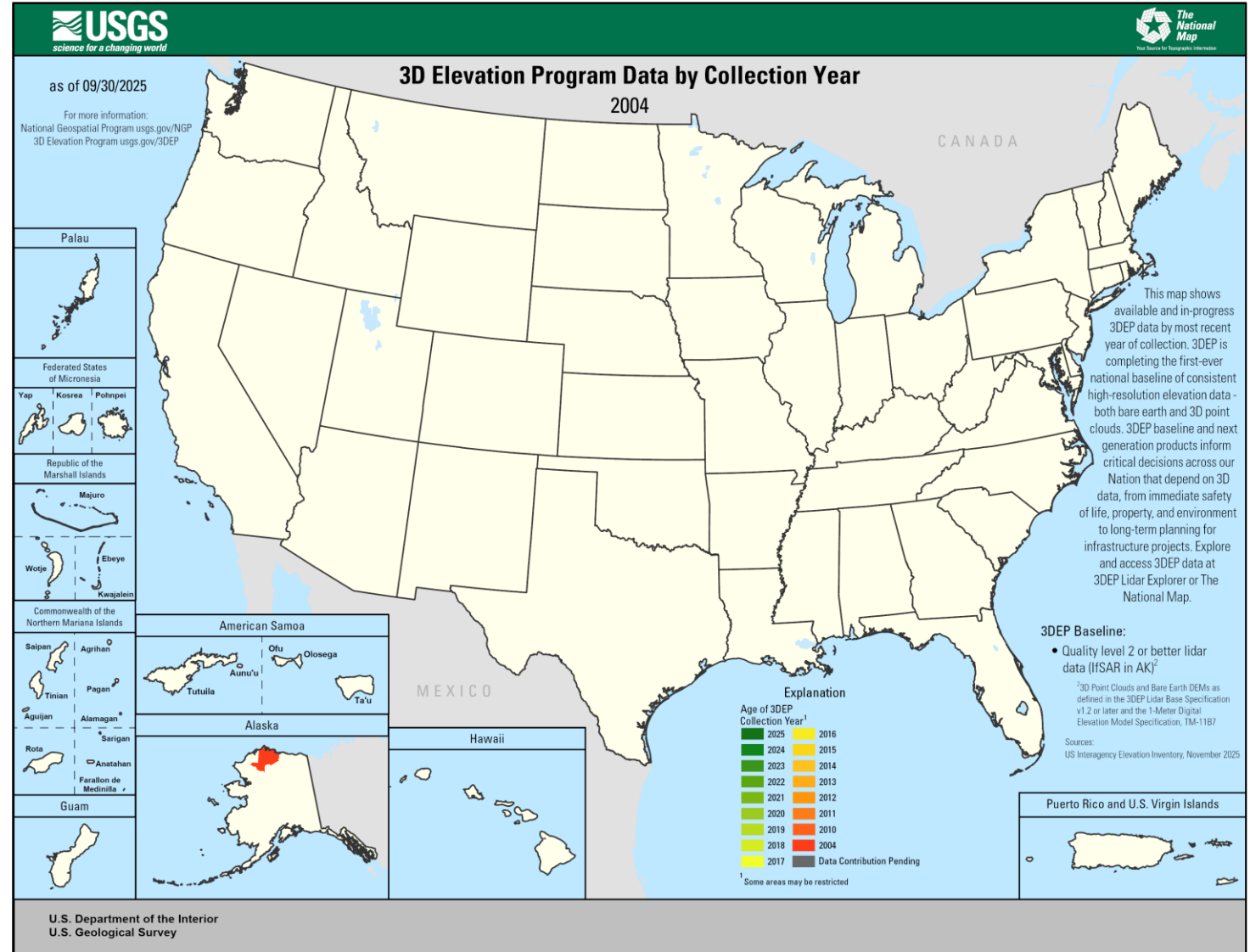
65

Percent of total 3DEP cost contributed by partners



82 Trillion

Lidar data points being distributed





100%

of the Nation has 3DEP
baseline data available
or in progress

Height (m)

50 m

26 m



National Geospatial Program

The National Geospatial program is funded at \$91,421,000, including \$43,905,000 for the 3D Elevation Program (3DEP), which maintains funding for the National Digital Trails project at the fiscal year 2024 enacted level. The agreement includes \$1,000,000 for the 3D Hydrography Program (3DHP).

Congressionally Directed Funding

Core Science Systems, National Geospatial Program, 3 DEP Western States	6,000
Core Science Systems, Alaska Mapping and Map Modernization	10,000

Continuing Appropriations and Extensions Act, 2027

This bill provides continuing FY2027 appropriations for federal agencies and extends various expiring programs and authorities.

Specifically, the bill provides continuing FY2027 appropriations to federal agencies through the earlier of December 11, 2026, or the enactment of the applicable appropriations act. It is known as a continuing resolution (CR) and prevents a government shutdown that would otherwise occur if the FY2027 appropriations bills have not been enacted when FY2027 begins on October 1, 2026.

FY 2027 House Mark

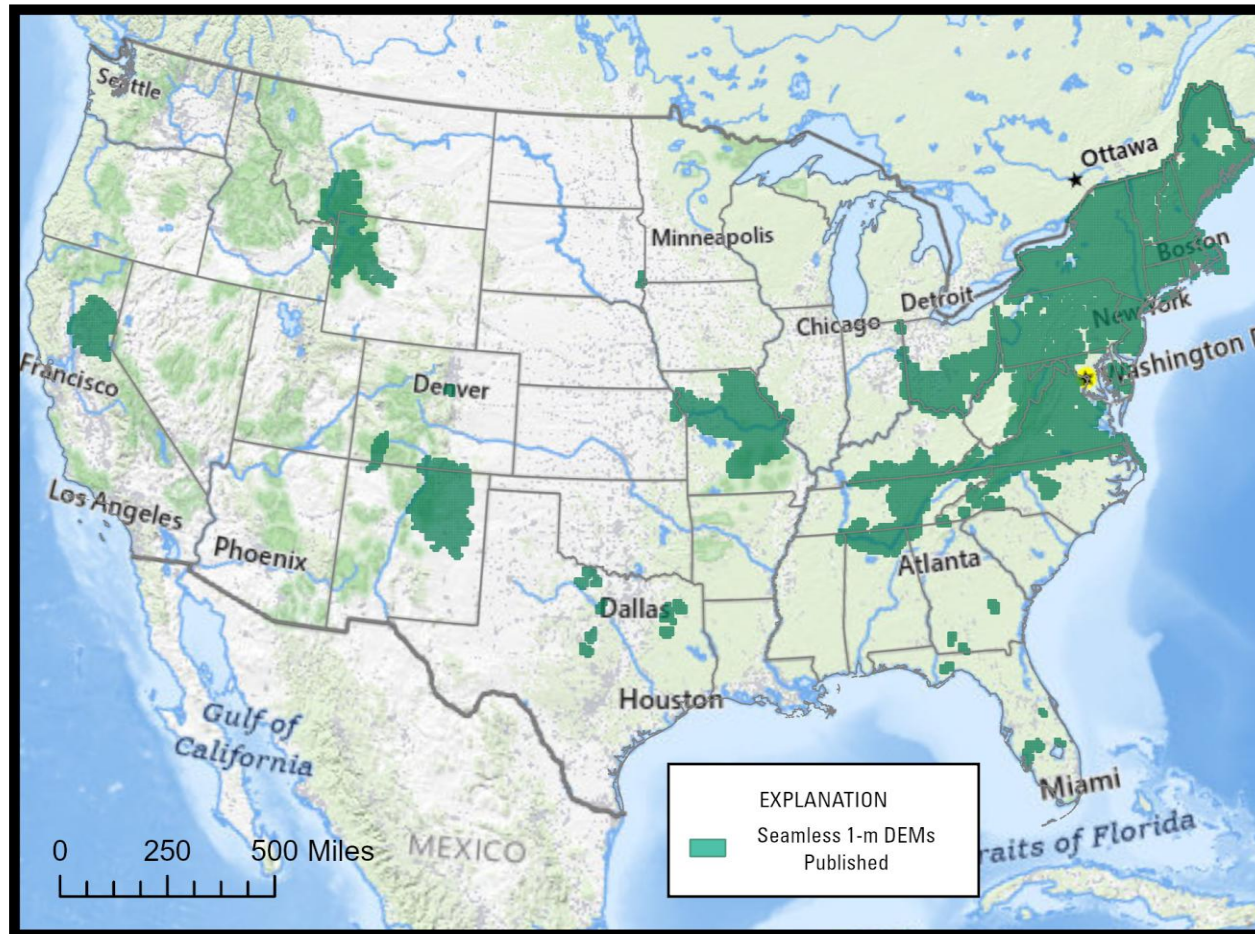
National Geospatial Program.—The recommendation includes \$90,650,000 for the National Geospatial Program, including \$1,350,000 is for the National Digital Trails project.

The Committee recognizes the importance of landscape-scale, three-dimensional maps for the Nation and the partnership it represents between localities, states, the Survey, and a myriad of other Federal agencies and includes \$44,905,000 for the 3D National Topographic Model (3DNTM), which integrates the 3D Elevation Program and the 3D Hydrography Program (3DHP). Within available funding, the Committee supports mapping and map modernization initiatives in southeastern states and Alaska.

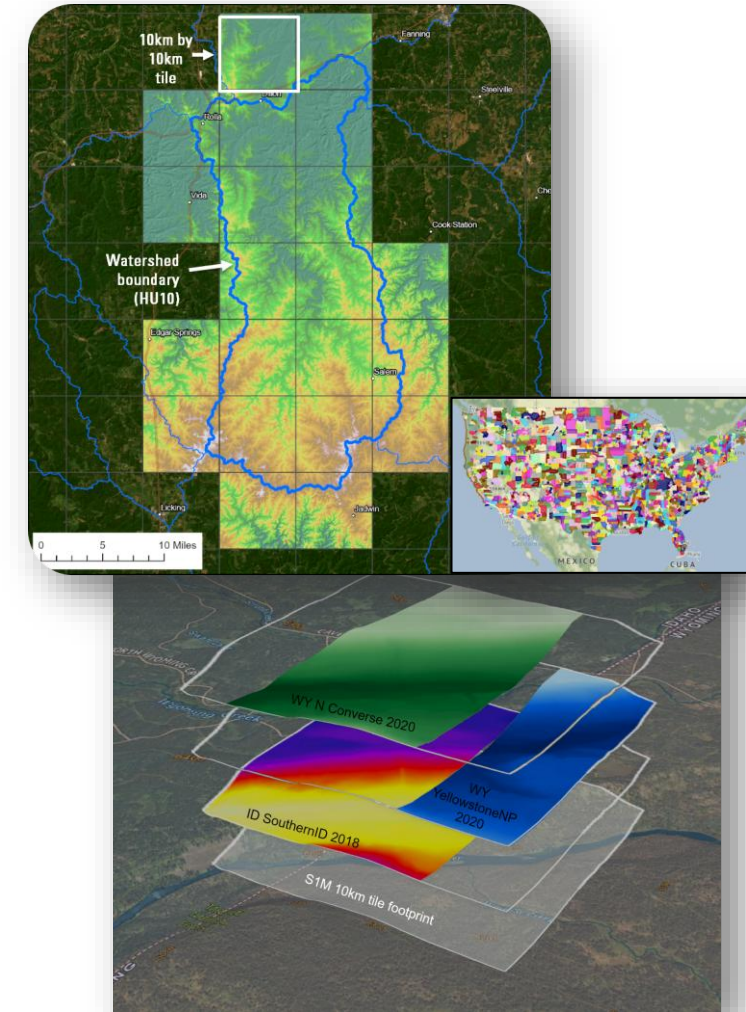
New Seamless 1-Meter Digital Elevation Model

The first tiles of the seamless 1-meter resolution DEM (S1M) were published in April 2025

~14,000 tiles are published as of end of August 2026

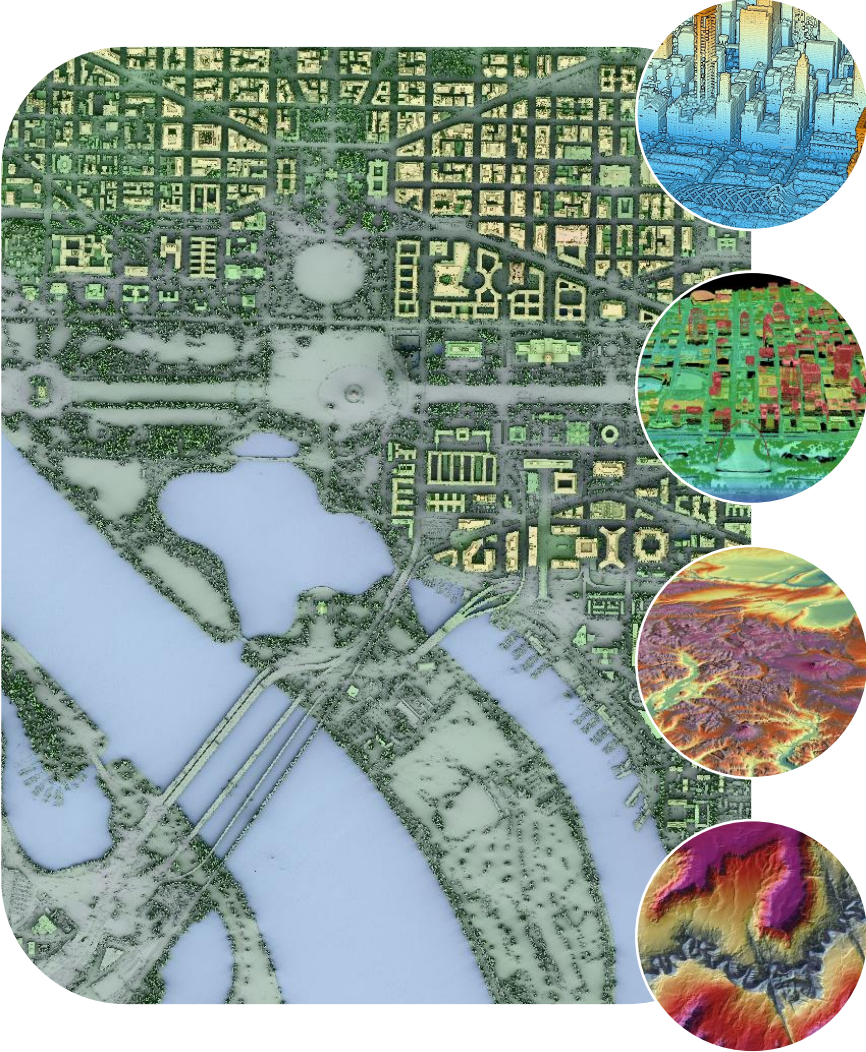


Availability as of 9/8/26



Example of stacking, prioritizing, and blending multiple overlapping lidar datasets to create S1M data.

Improving Turnaround Times from Acquisition to Delivery



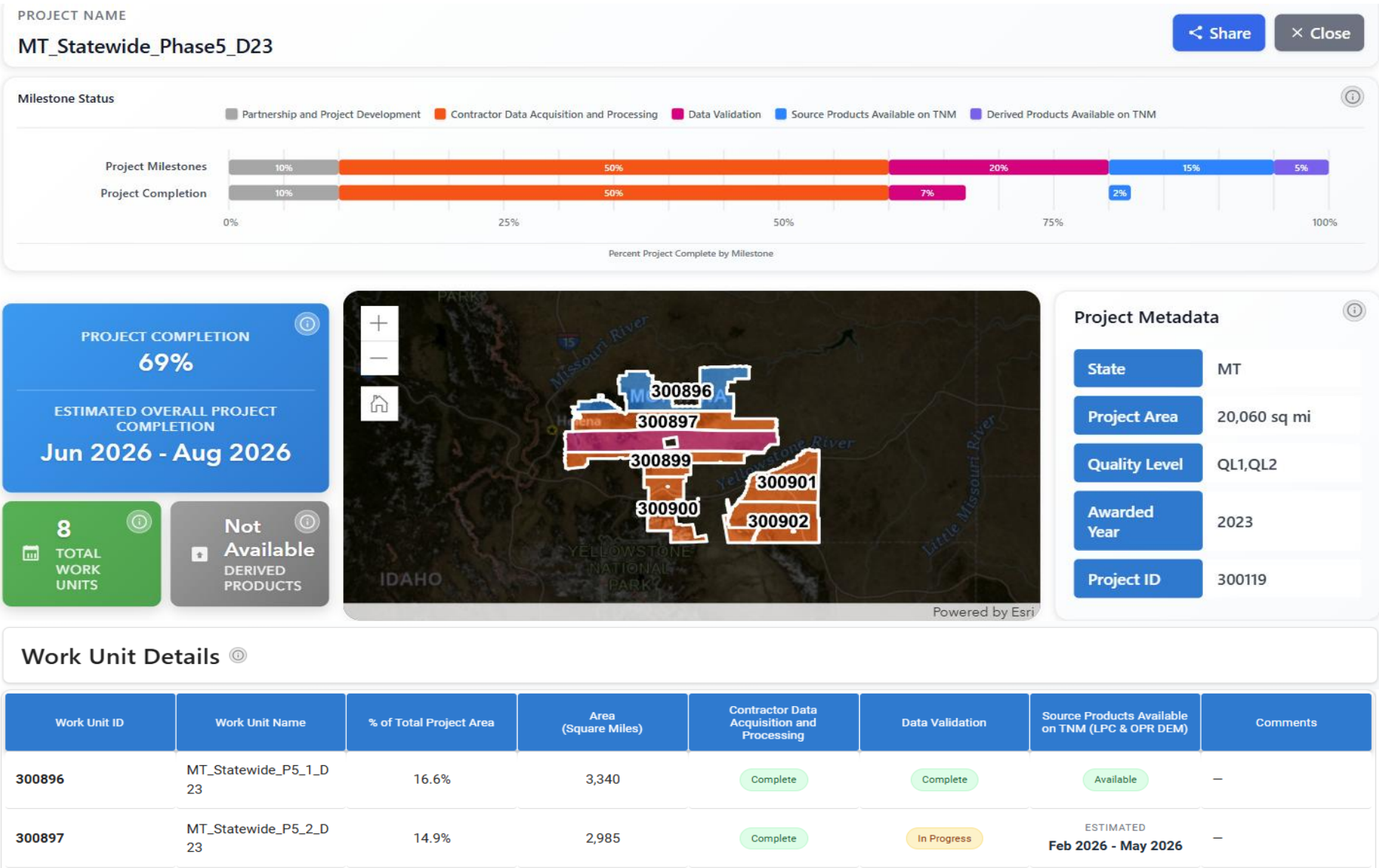
Held 3DEP Roundtable at Geo Week to solicit feedback from users and stakeholders (public and private)

3DNTM Project Tracker will provide status to enhance coordination

Streamlining 3DNTM pipeline to gain efficiencies

Working on cloud-enablement of tools and data

Tracking 3DNTM Project Status



Work Unit Details

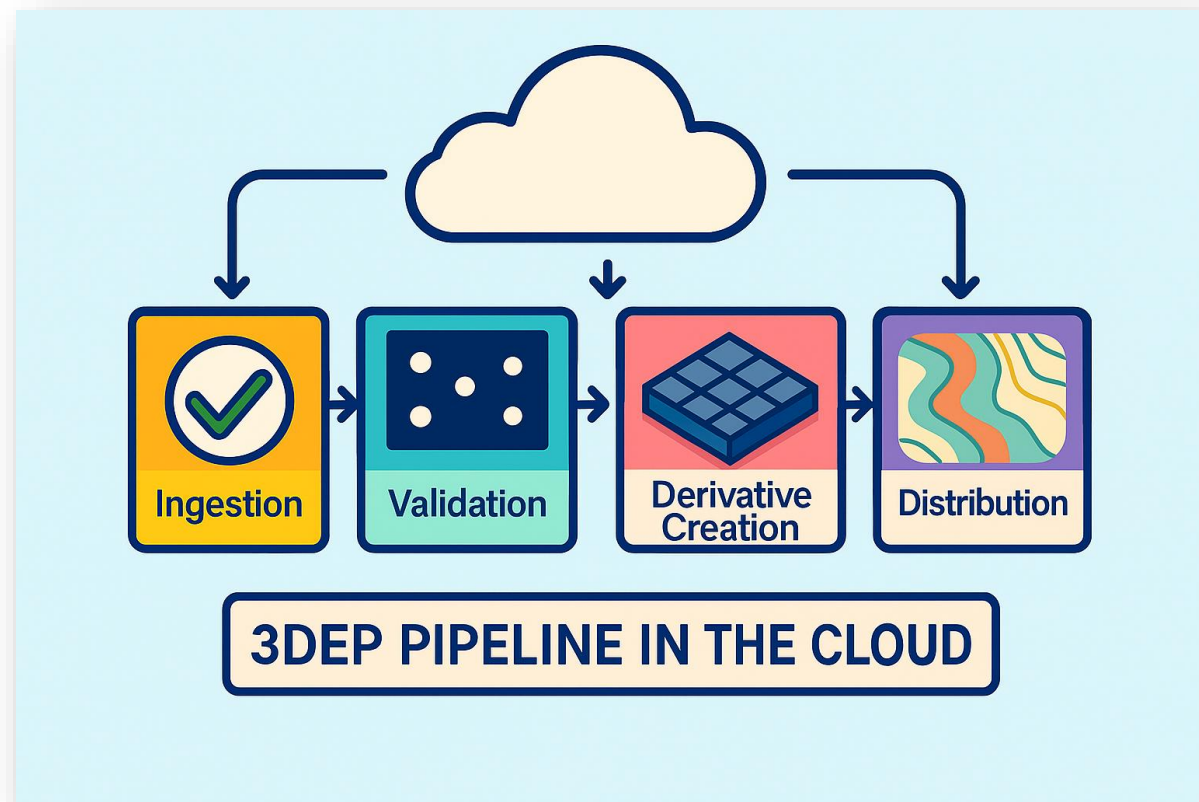
Work Unit ID	Work Unit Name	% of Total Project Area	Area (Square Miles)	Contractor Data Acquisition and Processing	Data Validation	Source Products Available on TNM (LPC & OPR DEM)	Comments
300896	MT_Statewide_P5_1_D23	16.6%	3,340	Complete	Complete	Available	—
300897	MT_Statewide_P5_2_D23	14.9%	2,985	Complete	In Progress	ESTIMATED Feb 2026 - May 2026	—

Cloud-Based Tools

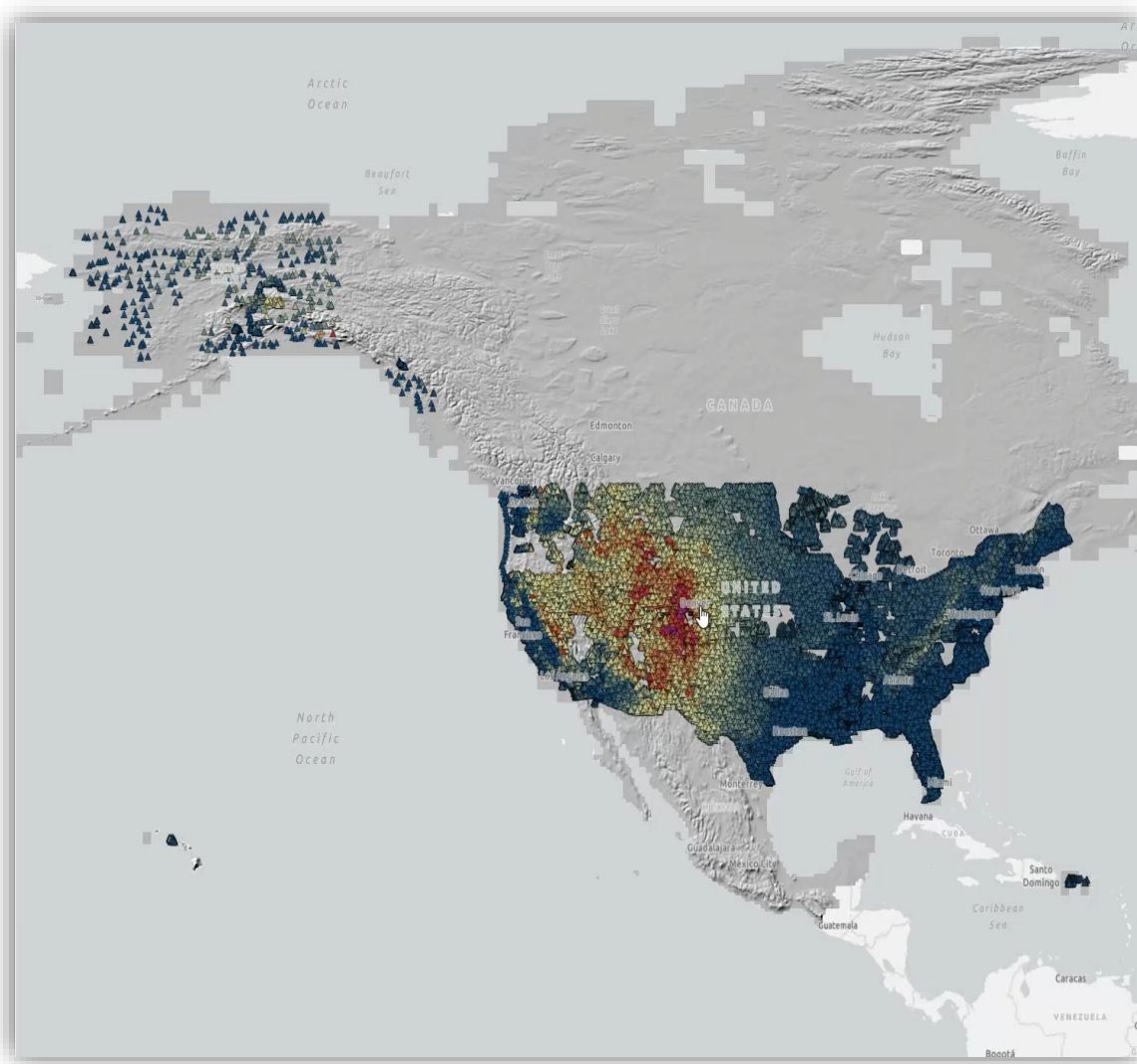
Testing the use of containerized operations software in the cloud for 3DEP lidar data validation.

Progress on optimizing workflows for a cloud environment:

- Most of the lidar data processing steps have been containerized
- Working on setting up cloud environment, transitioning to cloud native data formats, and managing security issues.
- Gathering data on cloud costs.



3DEP National Checkpoint Database (ver. 2.0)



145,299 checkpoints from 551
lidar projects/1874 Work Units

<https://www.sciencebase.gov/catalog/item/67075e6bd34e969edc59c3e7>

A New Customer Has Arrived: AI

Geospatial information is now consumed by both people and machines.

HUMAN

-  Infers context
-  Resolves ambiguity
-  Uses experience



AI

-  Needs structure
-  Needs semantics
-  Needs provenance

The challenge is no longer:
Can AI use our data?

The challenge is:
Are our data and systems ready to be used by AI?

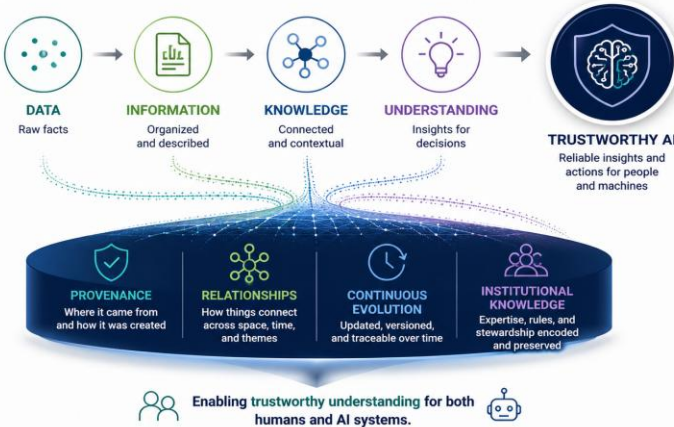
Building AI-Ready Geospatial Data

More than data. Built for discovery, integration, and trustworthy use by AI.

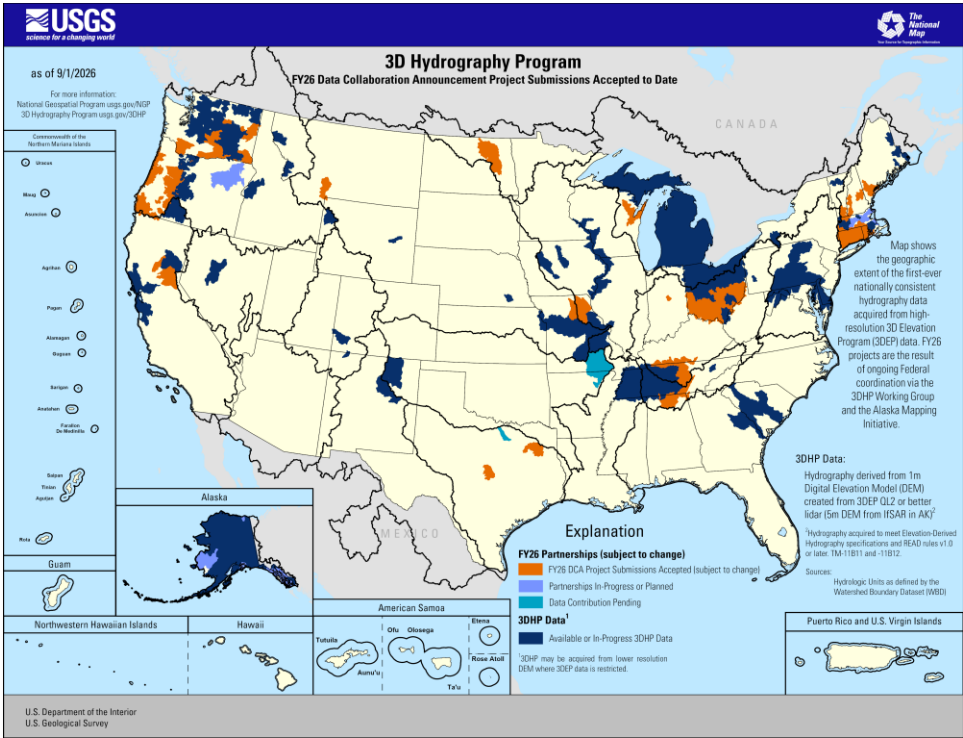
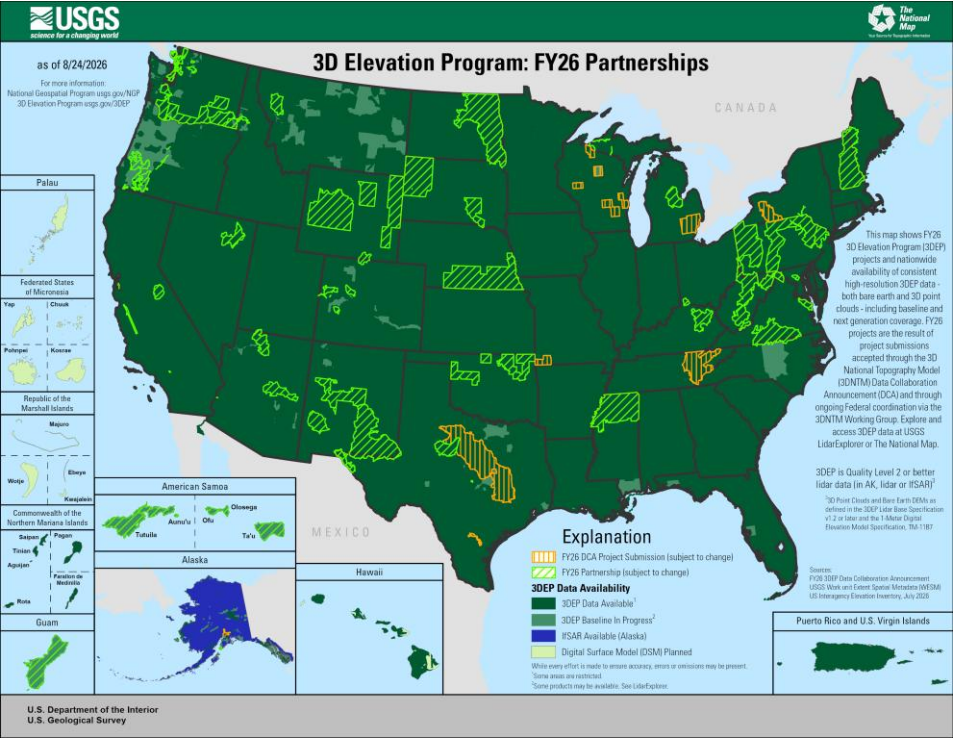


Beyond AI-Ready Data

AI requires **trusted context, provenance, relationships, and continuously evolving knowledge**—not just datasets.



FY26 Data Acquisition – How Are We Getting There?

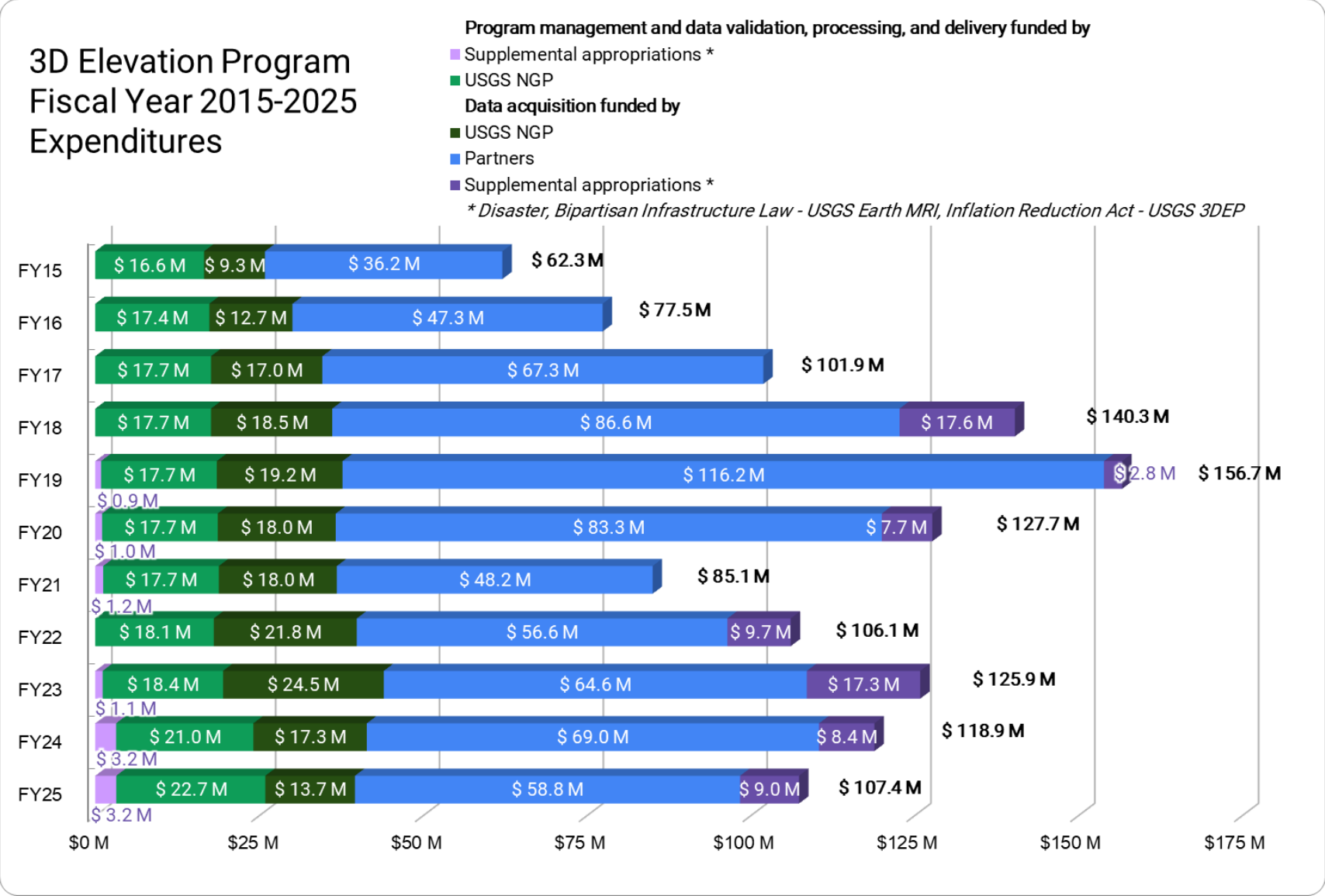


	Total Sq mi	Total Project Value
3DEP	~320K	~\$76.7M

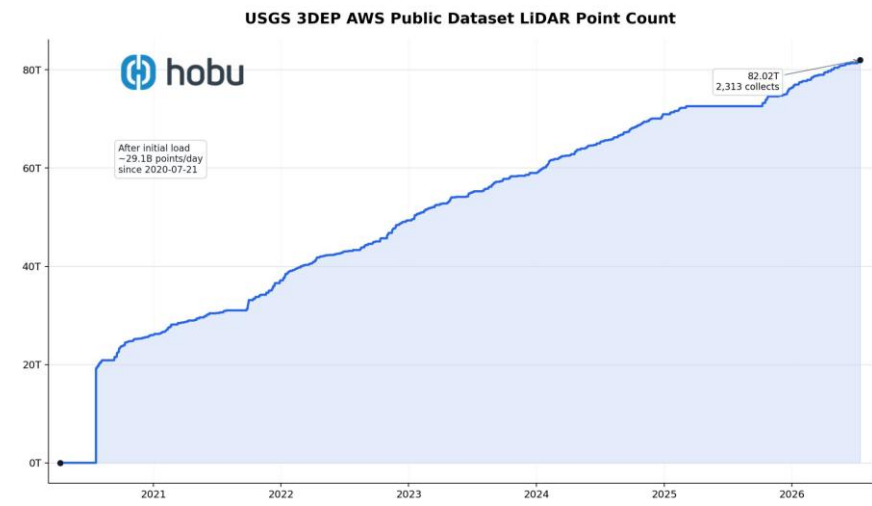
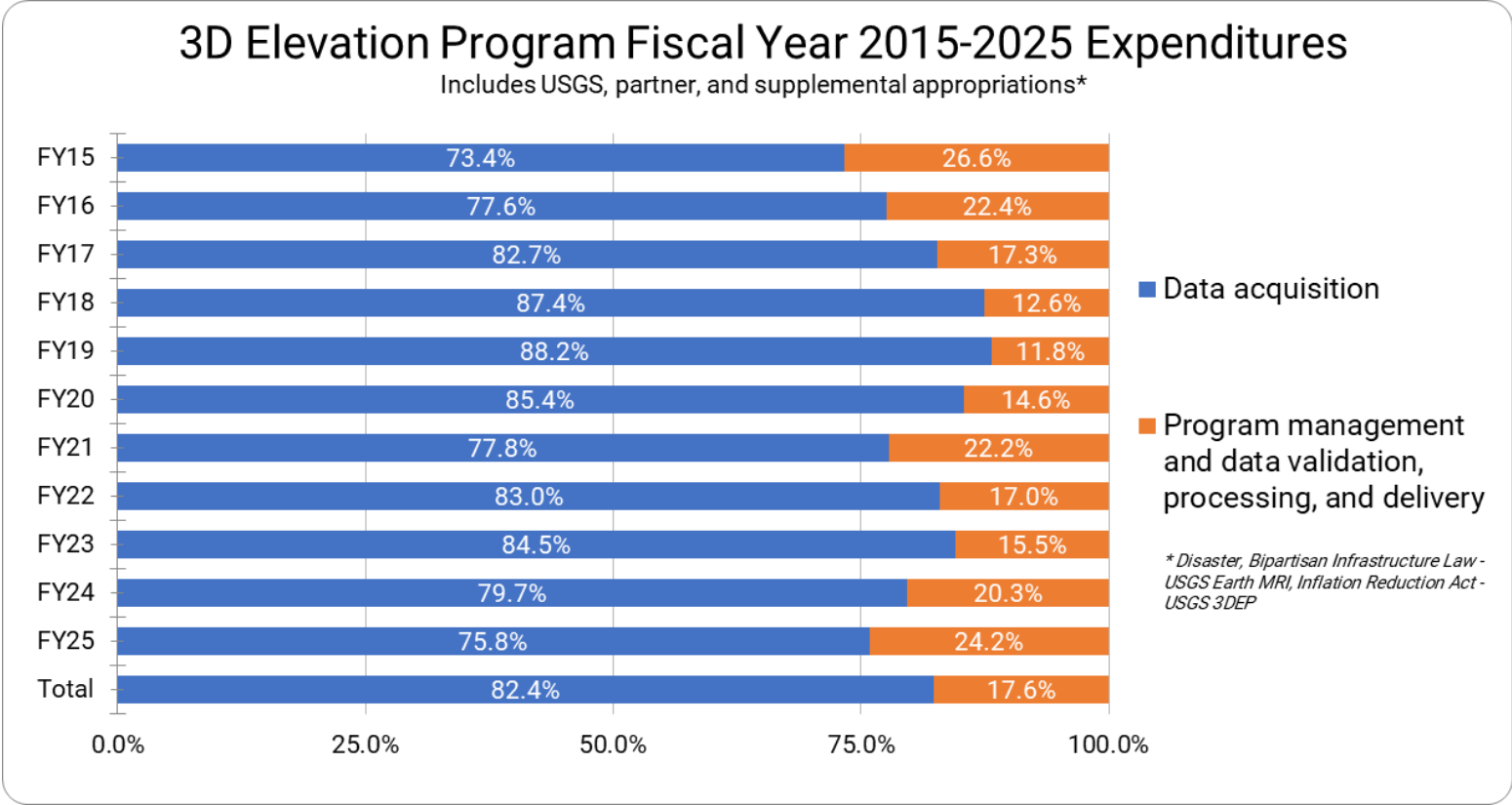
	Total Sq mi	Total Project Value
3DHP – CONUS +	~97K	~\$16.3M
3DHP - Alaska	~137K	~\$7.7M
Total	~234K	~\$24M

DCA ONLY	Submissions	Accepted	Sq mi	Partners bringing	Total Value
3DEP	9	7	45.6K	\$7.5M	\$9.5M
3DHP	19	16	85.3K	\$10.6M	\$13.6M

3DEP Expenditures FY2015-2025 by Funding Source



3DEP Expenditures FY2015-2025 by Activity



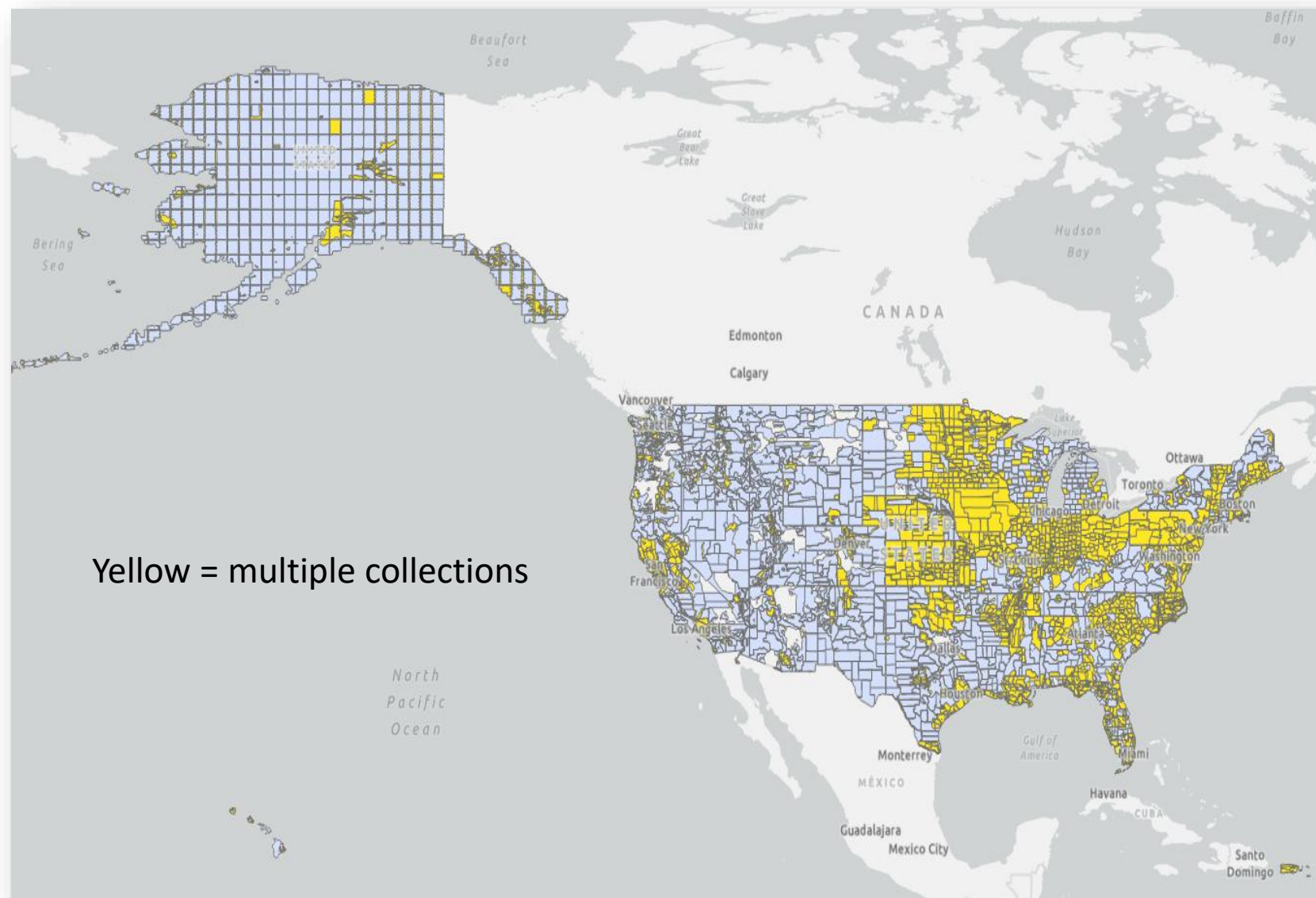
Since 2021, average pace of adding **nearly 30 billion points per day**

Supporting the Needs of Today and Tomorrow

3DEP data needs continuous updates:

- Partners continue to have priorities
- Areas where data is 5+ years old (or 8+ years for Pacific islands and territories)
- Nearly 70% of the nation is ready for data updates

Updating 3DEP coverage is key to change detection and analysis



Analyzing 3DEP Data is Critical to Applications

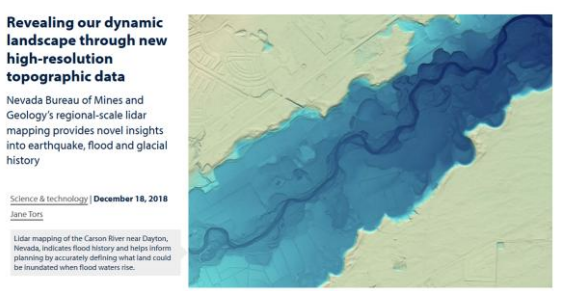


How LiDAR is Being Used to Help With Natural Disaster Mapping and Management

10 Mar 2019 THE ENGINEERING COMMUNITY



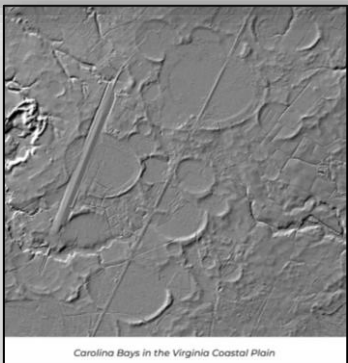
Figure 1. U.S. Geological Survey (USGS) flood-inundation maps for a 3.95-mile reach of the Saluda River near Greenville, South Carolina, originating approximately 150 feet downstream from Saluda Lake Dam. A lidar-derived digital elevation model was used to aid in hydraulic modeling to create these maps. The extent of inundation depicted corresponds to river stages of 20.0 feet (A) and 6.0 feet (B) at USGS streamgage 02162500 (yellow triangle) on the Saluda River. The red line corresponds to the model extent.



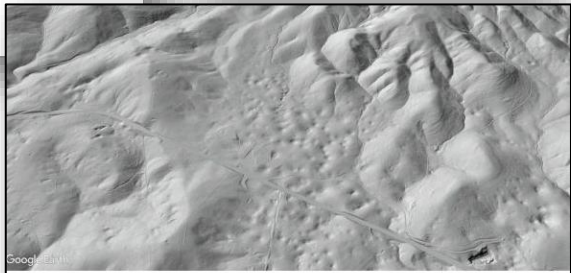
Lidar for earthquakes



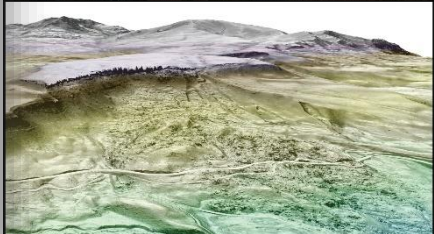
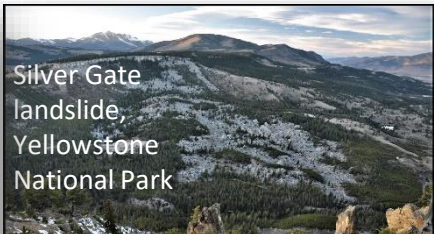
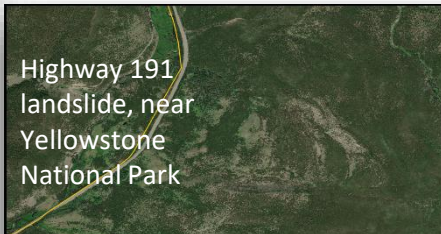
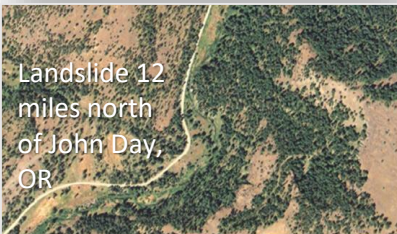
- Lidar allows us to see hazards through heavy forest
- Hillshade from bare-earth DEM
- San Andreas fault, CA



Carolina Bays in the Virginia Coastal Plain

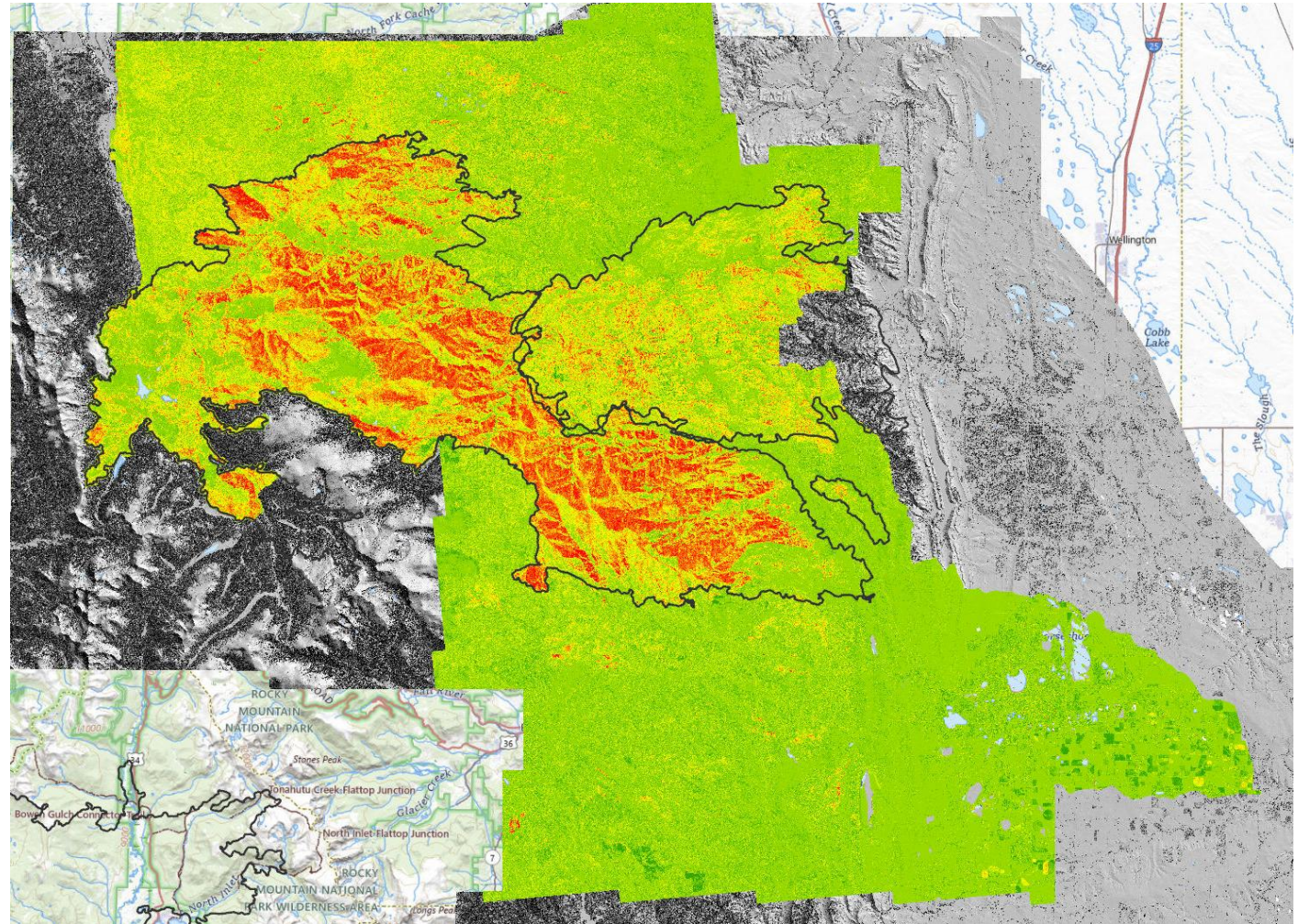


Sinkholes in Knox Group near Highway 460 Giles County



Change detection: Cameron Peak Fire

Combining datasets before and after events (such as fires) allows for better understanding of changes over large areas



Differencing DSM hillshades before and after fires, Northern Colorado

Wildland fire tells a story



Sources/Usage: Public Domain. [View Media Details](#)

A raging wildfire in Montana (John McColgan, U.S. Forest Service).

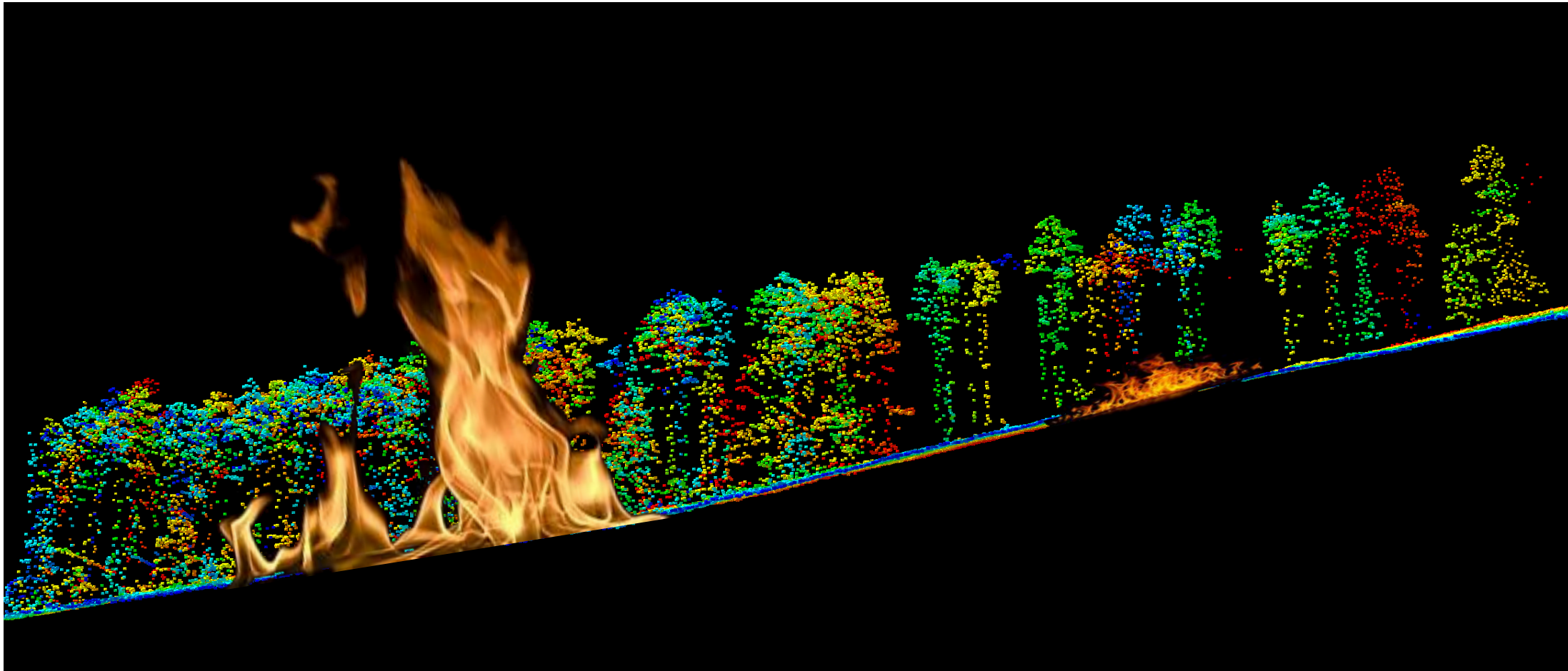


Sources/Usage: Public Domain. [View Media Details](#)

The aftermath of the January 9, 2018 debris flows in Montecito, California.

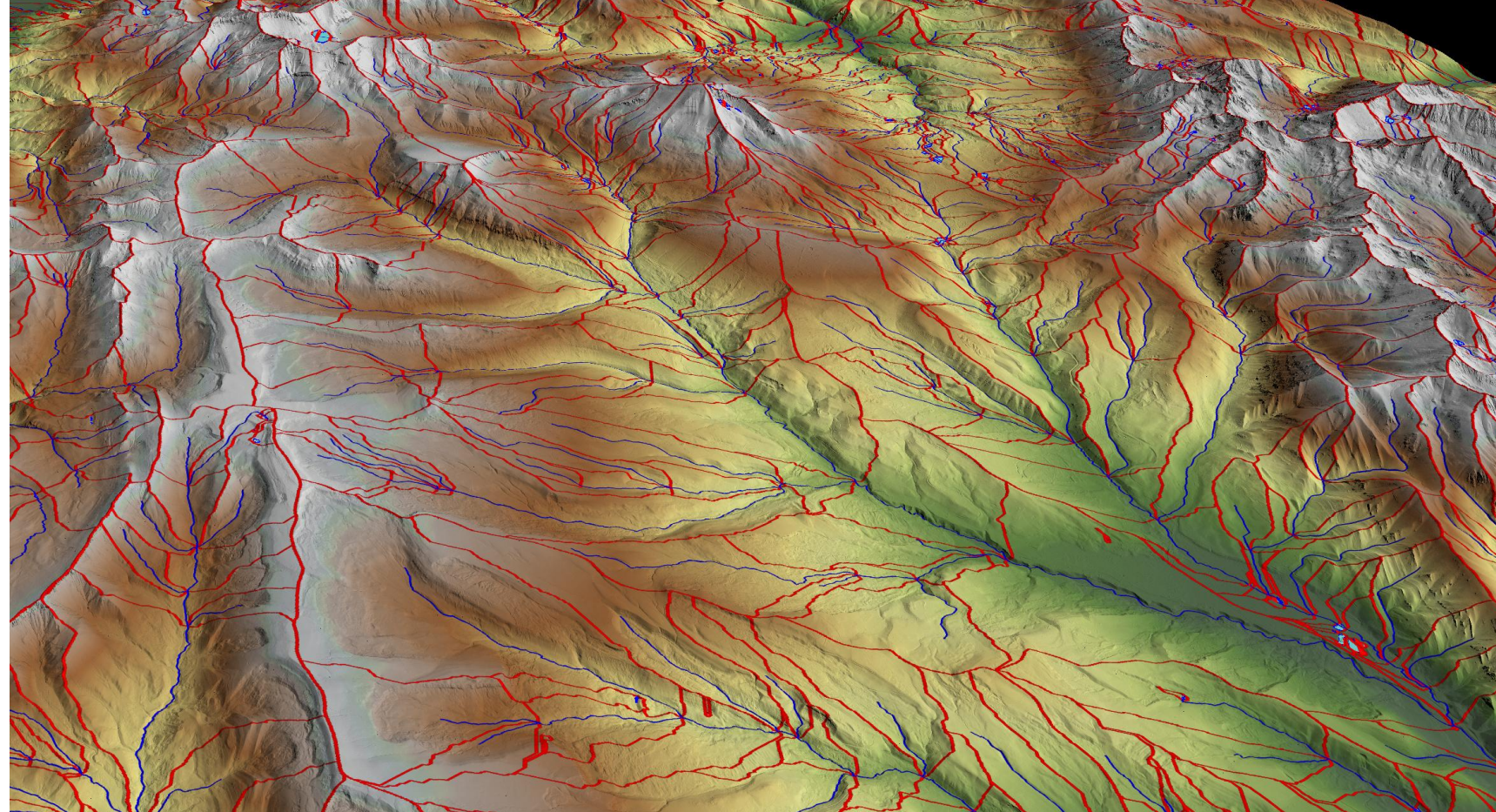


Estimating ladder fuel density



Hydrologic Modeling: Post-Fire Response

- BAER (Burned Area Emergency Response)
- Catchments for tying contributing areas to the stream network
- Access to hydro-enforced DEMs and flow direction rasters (proposed enhancements to the current specifications) will improve output quality and reduce processing time for modelling efforts like these



S1M and 3DHP data near Big Sky, MT

Use Case: Debris Flows

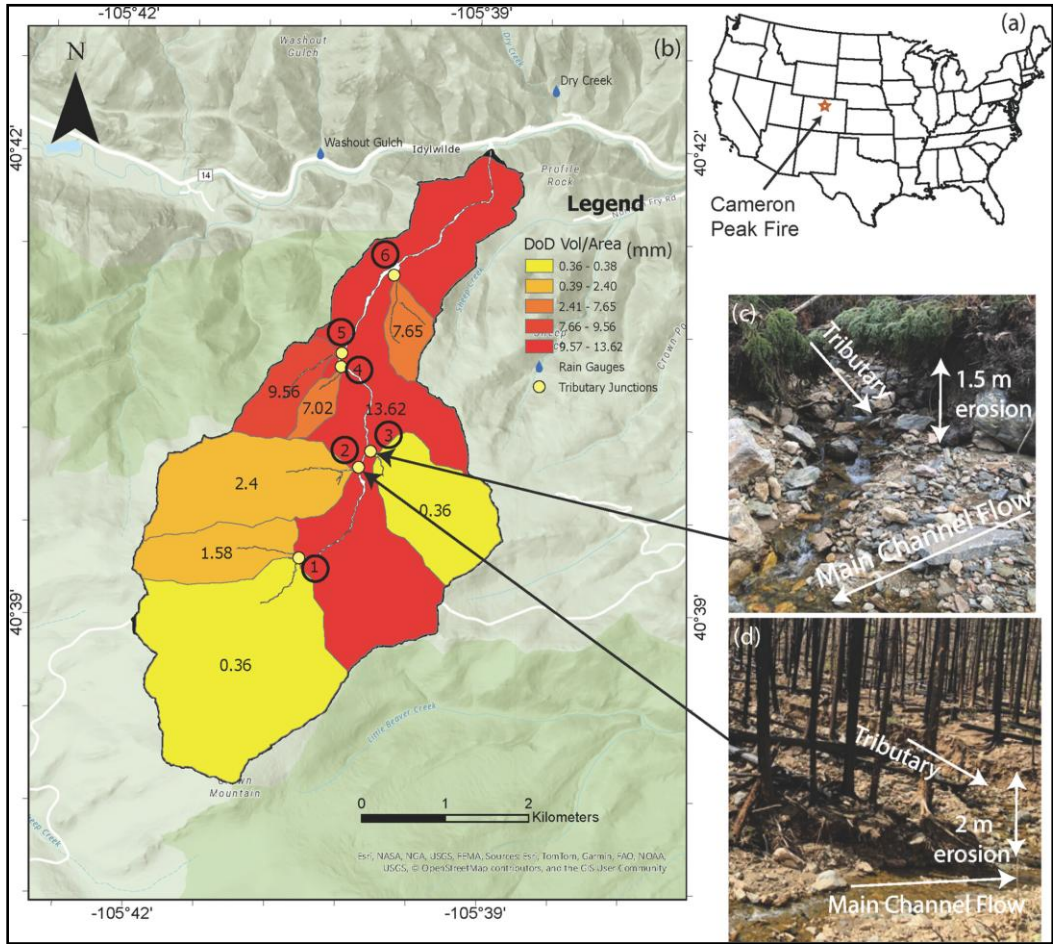
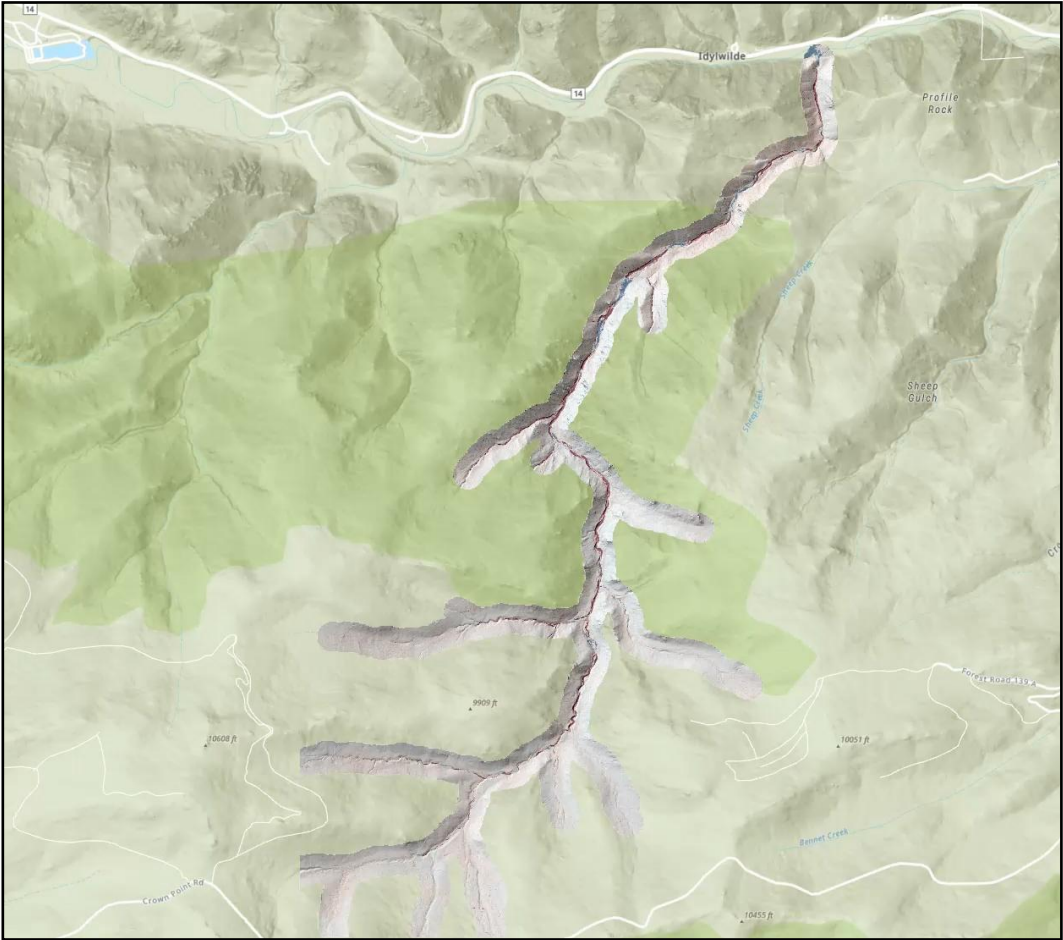
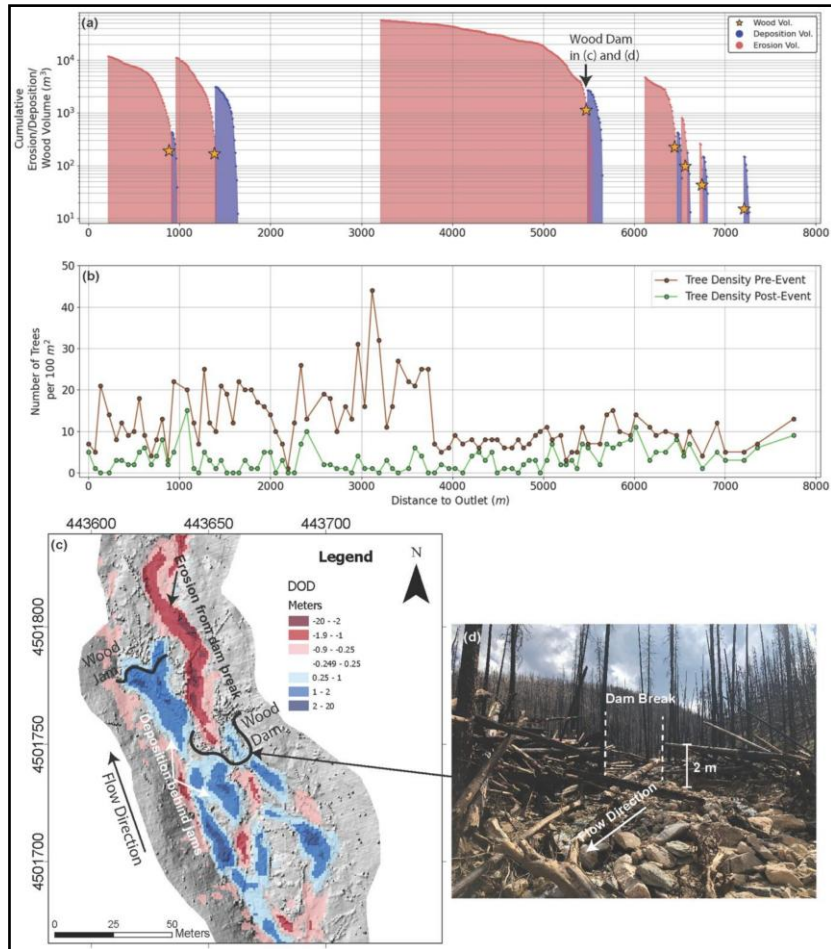


FIGURE 1: (a) Location of the Cameron Peak Fire. (b) Black Hollow catchment. Sub-catchments labelled with the net volume per area (mm) from digital elevation models of difference. Tributary junctions labelled with circles around numbers. (c and d) Photos of tributary junctions following the debris flow (Photo Credit: Rengers).

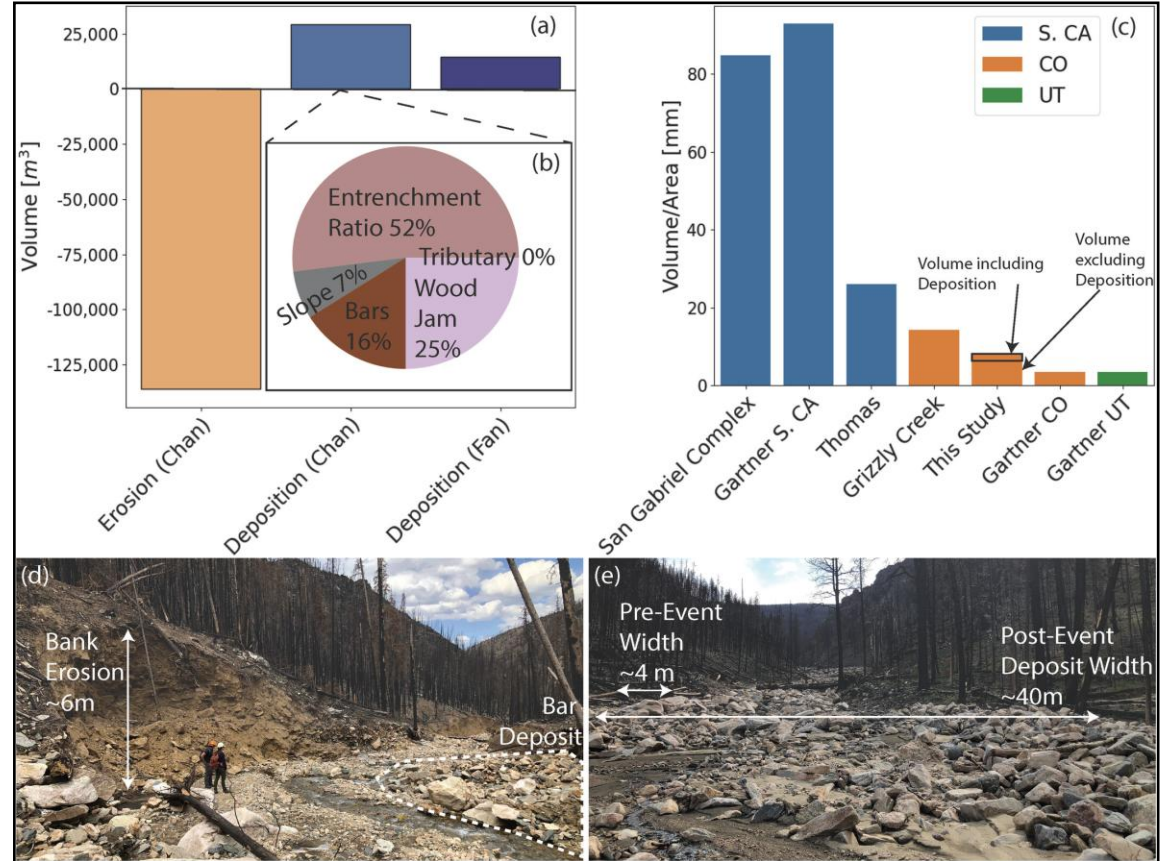


Use Case: Debris Flows



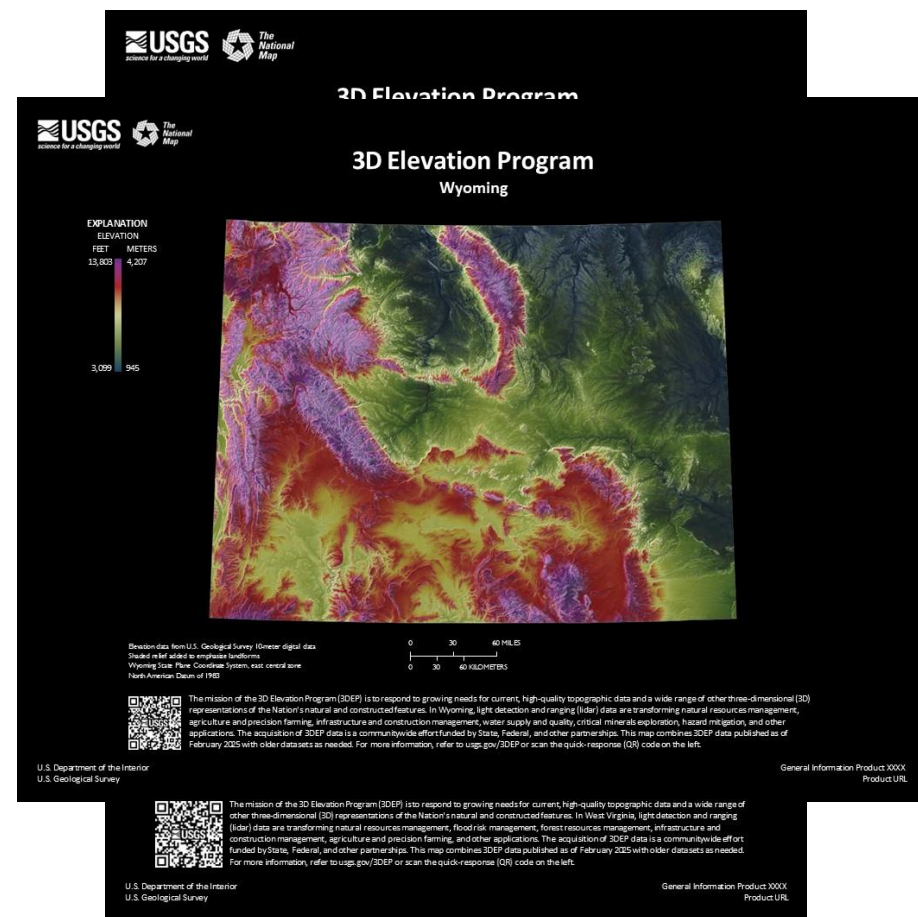
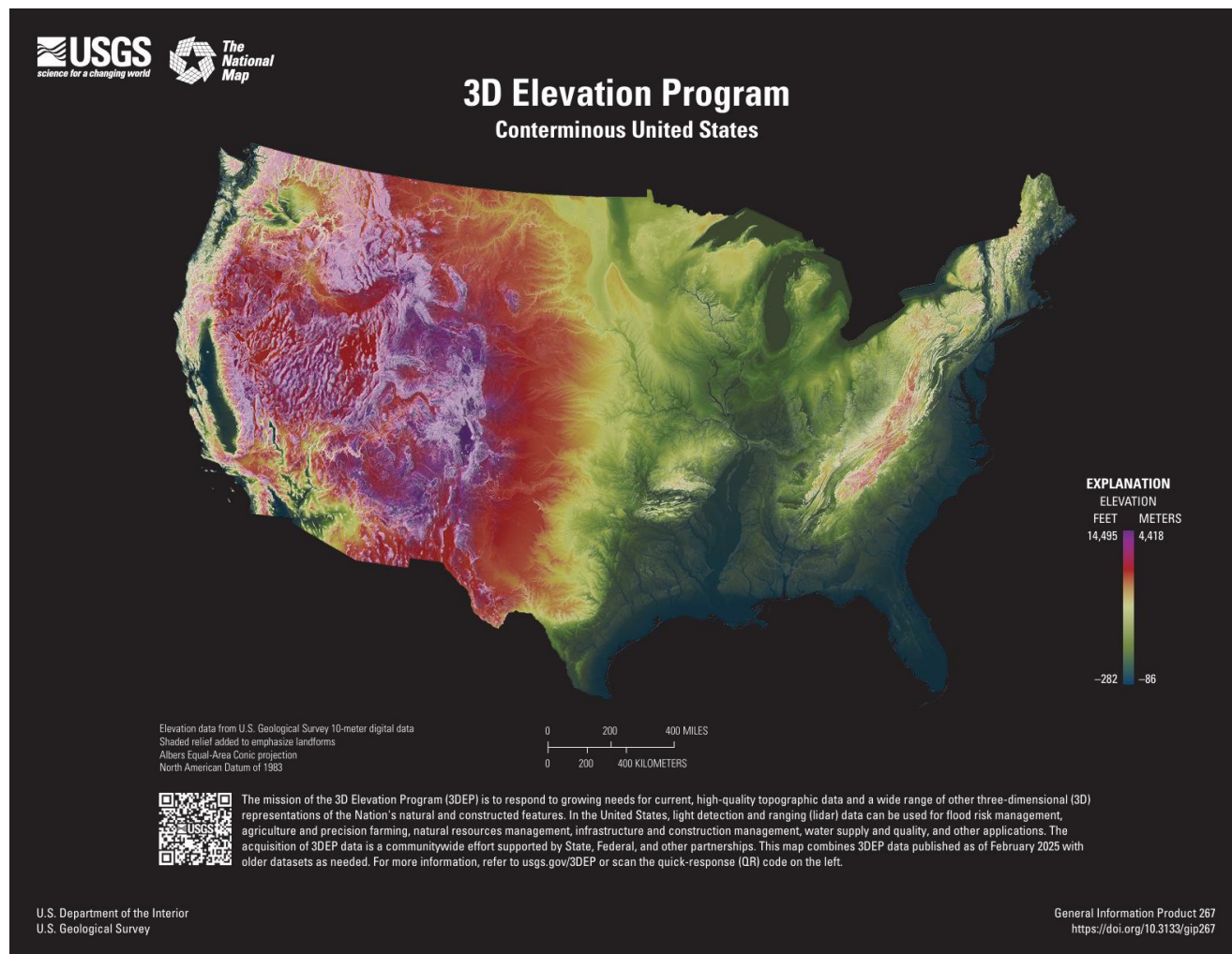
Rengers, F.K., Stoker, J.M., Kostelnik, J., Kean, J.W., Wohl, E.E., Barnhart, K. R. et al. (2026) Channel morphology and large wood control postfire debris-flow erosion and deposition. *Earth Surface Processes and Landforms*, 51(4), e70287. Available from: <https://doi.org/10.1002/esp.70287>

Channel morphology and large wood control postfire debris-flow erosion and deposition



(a) The total volume of erosion from the channel, deposition within the channel and deposition on the terminal fan. (b) The contribution of different factors to deposition in the channel. (c) The sediment yield (volume divided by catchment area) produced by postfire debris flows in the Western United States (bars coloured by state, CO is Colorado, UT is Utah and S.CA is Southern California). Data sources: San Gabriel Complex (Rengers et al., 2021), Thomas Fire (Kean et al., 2019), Grizzly Creek (Rengers et al., 2024), remaining sources (Gartner, Cannon, & Santi, 2014). (d) Photo of bar deposit and bank erosion. (e) Photo of in-channel deposit due to change from pre-event width to post-event width (Photo Credit: Rengers).

3DEP as Art – Please Share!



Published for CONUS and every state
as trading cards, letter size, and large
poster size.

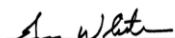
<https://www.usgs.gov/3d-elevation-program/3dep-art-series>

Thank you!

Sincerely,



Suzan K. DelBene
Member of Congress



George Whitesides
Member of Congress



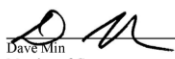
Josh Gotthamer
Member of Congress



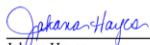
Jeff Clank
Member of Congress



Jason Crow
Member of Congress



Dave Min
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Jahana Hayes
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Marilyn Strickland
Member of Congress



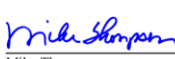
Kim Schrier, M.D.
Member of Congress



Rick Larsen
Member of Congress



Darren Soto
Member of Congress



Mike Thompson
Member of Congress



Jimmy Panetta
Member of Congress



Val Hoyle
Member of Congress

Congress of the United States
Washington, DC 20515

March 20, 2026

The Honorable Mike Simpson
Chairman
Subcommittee for Interior, Environment and
Related Agencies
U.S. House of Representatives
Washington, DC 20515

The Honorable Chellie Pingree
Ranking Member
Subcommittee for Interior, Environment and
Related Agencies
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Simpson and Ranking Member Pingree,

We write to respectfully request that you provide robust funding for the for the 3D National Topography Model (3DNTM) comprised of the 3D Elevation Program (3DEP) and the 3D Hydrography Program (3DHP) and the National Landslide Hazards Reduction Program administered by the U.S. Geological Survey (USGS) and codified by the National Landslide Preparedness Act (P.L. 116-323), in the FY 2027 Department of the Interior, Environment, and Related Agencies Appropriations Act.

The 3DEP portion of 3DNTM continues to satisfy the growing demand for consistent, high-quality topographic data, and a wide range of other three-dimensional representations of the Nation's natural and constructed features. The USGS has identified more than 600 applications that would benefit from enhanced elevation data. Data procured from 3DEP can be applied to flood risk management; infrastructure; water resources; aviation safety; telecommunications; homeland security; emergency response; precision agriculture; energy; pipeline safety; hydropower, and other areas. 3DEP promotes economic growth and facilitates resource development such as the critical minerals program.

3DNTM is as a progression of developments that began with the completion of the 3DEP baseline. The 3DEP baseline is being used to derive the 3D Hydrography Program data. The next generation of 3DEP also builds on the value of the baseline to improve and enable new applications that identify and monitor change to the natural and constructed environments. In the future 3DEP and 3DHP data will be more fully integrated into a unified 3D model. In addition, lidar data from 3DEP helps provide the USGS Natural Hazards Program with the best available scientific information and tools to reduce the threat of injuries, fatalities, and economic loss from a variety of disasters caused by the natural hazards such as landslides, sinkholes, earthquakes, and volcanoes.

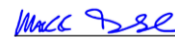
The USGS, with involvement from the private sector, states, and other stakeholders, conducted a 3D Nation Elevation Requirements and Benefits Study to determine and document the need for national elevation data within government and private markets. The 3D National Topography Model (3DNTM) and related 3D Elevation Program (3DEP), managed by USGS, offer an estimated potential annual benefit of over \$10.8 billion in enhanced, data-driven decision-making, such as flood risk management and infrastructure. Full implementation is conservatively estimated to provide a return on investment of nearly 5:1

We need to do more to fund programs and research efforts to prevent future natural disasters from becoming national tragedies. On January 5, 2021, the National Landslide Preparedness Act (P.L. 116-323) was signed into law making landslides a national priority, authorizing 3DEP and the National Landslide Hazards Reduction Program to better identify and understand landslide risks, coordinate with local and state agencies, and help improve emergency preparedness.

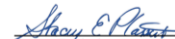
We are committed to working with our colleagues on both sides of the aisle to do everything we can to maximize the benefits for our constituents and for citizens across the country from the more than 600 public applications and business uses of enhanced elevation data. Thank you for your attention to this request.



Bill Foster
Member of Congress



Mark DeSaulnier
Member of Congress



Stacey E. Plaskett
Member of Congress



Kevin Mullin
Member of Congress



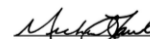
Summer L. Lee
Member of Congress



Andre Carson
Member of Congress



Vicente Gonzalez
Member of Congress



Michael V. Cawley
Member of Congress



Sydney Samuels-Dove
Member of Congress